

TEACHING WATER RESOURCE ECONOMICS: THE A.C.F. CASE STUDY

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Abstract. This paper reports on the use of active learning methods in teaching an upper level undergraduate course on water resource economics in the Department of Agricultural & Applied Economics. The elements used in the course include distance learning technology, a web site, readings, the interactive use of course notes over E-mail, computer programs and a set of five projects that account for 100 percent of the student grade. The paper will also report on a three-day "mock negotiation" session, held at the University of Alabama, comprised of students from Georgia, Florida and Alabama concerning the tri-state water negotiations.

INTRODUCTION

Issues surrounding the allocation, availability, pricing and management of water resources are at the forefront of the field of resource economics. The purpose of *Water Resource Economics* is to develop an understanding of the role of economics in determining public policy toward water resources. The goal is to teach how to apply basic microeconomic theory and principles to issues of water allocation. As part of the Department's undergraduate and MS programs in Environmental Economics and Management, AAE 4800/6800 is a vital part of the resource economics program in the Department. By using an active learning format *Water Resource Economics* helps students learn how to write, to review what they write, to use the library, to use computers, to gather data and to communicate concisely and fully. Student responses have consistently noted that the course is relevant and provides students with "real world" experiences.

METHODS AND CONCEPTS

The course first examines the physical nature of water and its unique features affecting its allocation and issues of

water law. Benefit cost analysis and welfare optimization make up the second part of the course followed by an introduction to non-market valuation. Demand theory as it applies to water as well as water pricing is covered in parts three and four. Part five concentrates on water markets and water rights and the final part of the course examines conflict resolution and game theory.

Water Resource Economics uses a variety of methods and techniques to stimulate the learning process. Students are given a bound copy of the class notes; a 101 page review of the course material. A web site is used to both give students information and to encourage Email communication with the instructor. A unique feature of this course is its use of distance education technology. Field trips to nearby water and wastewater facilities give students a feel for water supply issues. Finally, an exciting extension to the course was the development of a special topics section that allows students to participate in mock negotiations with students from Florida and Alabama covering the ACF/ACT case.

Mock Negotiations

Students from the three states involved in the ACF/ACT negotiations participated in a three-day mock negotiation whose purpose was to find a solution to the tri-state water wars.

The approach was to involve students at four institutions in representing interest groups as well as trying to negotiate a water allocation formula between the States of Georgia, Florida, and Alabama. Student participants were from the Department of Agricultural and Applied Economics at the University of Georgia, Department of Geography, University of Alabama, the Food and Resource Economics Department at the University of Florida and Urban Planning at Florida State University.

Pre-Negotiations

The mock negotiations were conducted at the University

of Alabama on May 29-31, 1998. Prior to the negotiation session, students at each institution were recruited to work on the project. Five students each from Georgia, Florida, and Alabama were assigned roles to play in the negotiation: a representative of each Governor who acted as the Interstate Compact Commissioner, environmental interests, agricultural interests, hydropower and industry interests and navigation interests. In Georgia, the power and navigation interests were handled by one student and another represented the metropolitan area of Atlanta. Additionally, students at Florida State were charged with providing all interests with hydrologic information based on proposed changes in water use.

Over the course of a semester (a quarter in Georgia) each student gathered data on the Tri-State issues and interviewed their real-life counterpart. In defining their initial negotiation positions, the students were not held to the strict positions of the actual interest groups. Rather, it was hoped that new ideas would surface to help the professionals involved in the process.

Negotiations

The negotiation session was conducted by a mediator experienced in water-related negotiations. However, the role of the mediator was confined to helping move the process along and not to provide actual mediation. The first half-day session involved each state commissioner presenting an opening position with interest group representatives adding further clarification. The student groups all presented a fairly unified view of state interests. After the initial positions, the mediator guided the students in identifying the three main topics for discussion over the following two days. After a number of rounds of consensus building, the students decided the three areas to be negotiated were: conflicts between system-wide management of water resources versus state sovereignty; guaranteed minimal flow during drought and non-drought periods; and, the demands on the basins due to growth in the Atlanta metro area.

For the rest of the session, students sought to find proposals to address these issues. Since all three states were involved in the ACF river basin, negotiations were limited to that compact. By the end of the session, an ACF River Basin Allocation Formula was signed by the three state commissioners.

Post Negotiations

The students arrived at the point similar to the real negotiation: agreement on some issues and the

postponement and establishment of a study commission on the hard issues surrounding water allocation.

While words like frustrating, difficult, and exhausting, were used by students and describe the negotiations, so too were exhilarating, fascinating, and exciting. Among the lessons learned was the power of language and the necessity for precision in the use of words. Each student noted that the sessions amounted to the best learning experience of their college careers. Real life decision makers and interest groups came away from the sessions with some new ideas and possible approaches to the problem of water allocation.